

CLAIMS

What is claimed is:

1. A method of processing a packet sent to a provider network, the method comprising:
 - 5 receiving the packet via a user port of an edge switch of the network;
 - determining forwarding and routing by the edge switch based on a user VLAN identifier (VID); and
 - 10 inserting a provider VLAN tag, including a provider VID, into the packet prior to transmission of the packet via a provider port of the edge switch.
2. The method of claim 1, further comprising:
 - 15 forwarding and routing the packet by a middle switch based on the provider VLAN tag.
3. The method of claim 1, wherein the packet received includes a user VLAN tag, and wherein the user VID is derived from the user VLAN tag.
- 20 4. The method of claim 1, wherein the packet received does not include a user VLAN tag, and wherein the user VID is assigned to be a port VID associated with the user port.
5. The method of claim 1, wherein the provider VID comprises a VID of a destination VLAN.
- 25 6. The method of claim 1, wherein the provider VID comprises a port VID associated with the input port.
- 30 7. The method of claim 1, wherein the edge switch determines a class of service (COS) for the packet based on the user tag.

8. The method of claim 1, wherein the edge switch determines a security action for the packet based on the user tag.
9. The method of claim 1, further comprising:
 - 5 receiving the packet by a provider port of a second edge switch of the network; and
 - stripping the provider VLAN tag from the packet.
10. The method of claim 9, wherein the packet is routed to more than one middle switch before arriving at the second edge switch.
11. A switch apparatus for processing a packet sent to a provider network, the apparatus comprising:
 - a user port for receiving the packet;
 - 15 forwarding logic for determining forwarding and routing based on a user VLAN identifier (VID); and
 - a provider port that inserts a provider VLAN tag, including a provider VID, into the packet prior to transmission of the packet.
- 20 12. A system for processing packets sent to a provider network, the system comprising:
 - a first switch configured to receive a packet via a user port, to determine routing and forwarding for the packet based on a user VID, and to insert a provider VLAN tag into the packet at a provider port prior to transmission of the packet; and
 - 25 a second switch configured to receive the packet via a provider port, to strip the provider VLAN tag from the packet at the provider port, and to determine routing and forwarding for the packet based on the user VID.
- 30 13. The system of claim 12, further comprising at least one middle switch communicatively coupled between the first and second switches.

14. The system of claim 12, further comprising utilization of a class of service (COS) for routing and forwarding of the packet that is based on the user VID.
- 5 15. The system of claim 12, further comprising determining a security action for the packet based on the user tag.
- 10 16. A method of routing and forwarding a packet using double Q tagging to create a tunnel between a user port of a first switch and a user port of a second switch, wherein a user-expected service level is provided in relation to traffic flowing through the tunnel.
- 15 17. The method of claim 16, where the user-expected service level comprises a quality of service level for the traffic.
18. The method of claim 16, wherein the user-expected service level comprises a security action for the traffic.
19. An apparatus for processing a packet sent to a provider network, the apparatus comprising:
 - means for receiving the packet via a user port of an edge switch of the network;
 - means for determining forwarding and routing by the edge switch based on a user VLAN identifier (VID); and
 - 25 means for inserting a provider VLAN tag, including a provider VID, into the packet prior to transmission of the packet via a provider port of the edge switch.